AMENDMENT TO CLAIMS

In the claims:

1. (Previously Presented): An energy transfer apparatus for facilitating energy transfer into a mass of airway tissue, said apparatus sized to enter a bronchus or bronchiole of a human lung and comprising:

a flexible elongated body having a proximal portion and a distal portion and at least one lumen extending therebetween;

a distally located expandable portion of said elongated body, said expandable portion having a first state and a second state, wherein said second state is radially expanded from said elongated body;

a distal tip located distally of said expandable portion;

at least one energy transfer element at an exterior of said expandable portion, wherein each of said energy transfer elements is configured to contact a wall of the bronchus or bronchiole when said expandable portion is in said second state,

a proximal joint at an intersection of said distal portion and said expandable portion wherein said expandable portion comprises a plurality of legs, each of said legs having a first end extending from said proximal joint and a second end fixedly attached to a distal joint, said distal joint being adjacent to said distal tip;

a temperature detecting element attached to one of said plurality of legs wherein said temperature detecting element is in electrical communication with at least a portion of said leg such that said portion of said leg forms part of the temperature detecting element; and

a deployment member comprising a wire extending from said distal tip to said proximal portion, configured to move said expandable portion between said first and second state, said wire extending at least between said expandable portion and said proximal portion of said elongated body and where said wire is also configured to provide a current to said energy transfer elements.

2. (Previously Presented): The energy transfer apparatus of claim 1 wherein said temperature detecting element is attached to a surface of said leg.

3. (Previously Presented): The energy transfer apparatus of claim 1 wherein said energy transferring element each comprises a radio frequency electrode configured to heat the airway tissue by delivering radio frequency energy when connected to a radio frequency generator.

4. (Previously Presented): The energy transfer apparatus of claim 3 wherein said radio frequency electrode is monopolar.

5. (Previously Presented): The energy transfer apparatus of claim 3 wherein said radio frequency electrode is bipolar.

6. (Original): The energy transfer apparatus of claim 1 wherein said energy transferring element each comprises a resistively heated element configured to conductively heat the airway tissue.

7. (Original): The energy transfer apparatus of claim 6 wherein each of said resistively heated elements are conductively attached to said expandable portion.

8. (Original): The energy transfer apparatus of claim 6 wherein said resistively heated element uses AC current.

9. (Original): The energy transfer apparatus of claim 6 wherein said resistively heated element uses DC current.

10. (Original): The energy transfer apparatus of claim 6 wherein said resistively heated element uses RF energy.

11. (Previously Presented): The energy transfer apparatus of claim 1 wherein said energy transferring elements comprise at least one resistively heated element configured to heat the airway tissue and at least one radio frequency electrode configured to heat the airway tissue when connected to a radio frequency generator.

12. (Original): The energy transfer apparatus of claim 1 wherein a diameter of said expandable portion in said second state is less than 15 mm, and wherein said elongated body has a diameter less than said diameter of said expandable portion in said second state.

13. (Original): The energy transfer apparatus of claim 1 wherein said expandable portion comprises pre-shaped tines configured to expand upon advancement out a sheath and contract when withdrawn into said sheath, said pre-shaped tines also having a portion which is biased against the wall of the bronchus or bronchiole when said tines are expanded.

14. – 17. (Cancelled)

18. (Previously Presented): The energy transfer apparatus of claim 1 wherein each of said legs having a center section substantially parallel to said elongated body and each of said legs being spaced around a circumference of said elongated body to form a basket.

19. (Previously Presented): The energy transfer apparatus of claim 1 wherein each said basket leg has a circular cross section.

20. (Previously Presented): The energy transfer apparatus of claim 1 wherein each said basket leg has a rectangular cross section.

21. (Previously Presented): The energy transfer apparatus of claim 1 wherein at least of one of said legs comprises an electrically conductive material, and said leg functions as said energy transfer element.

22. (Original): The energy transfer apparatus of claim 21 wherein said basket legs comprise a stainless steel alloy.

23. (Previously Presented): The energy transfer apparatus of claim 1 wherein said basket has a length from said proximal joint to said distal joint of less than 35 mm when said basket is in said first state.

24. (Previously Presented): The energy transfer apparatus of claim 1 wherein said plurality of legs consists of four legs each spaced at approximately 90 degree intervals around said elongated body.

25. (Previously Presented): The energy transfer apparatus of claim 1 wherein said plurality of legs consists of five legs each spaced at approximately 72 degree intervals around said elongated body.

26. (Previously Presented): The energy transfer apparatus of claim 1 wherein said temperature detecting element is attached to an inside of a first leg of said plurality of single legs.

27. (Original): The energy transfer apparatus of claim 26 further comprising at least one additional temperature detecting element attached said plurality of legs.

28. (Previously Presented): The energy transfer apparatus of claim 26 wherein said temperature detecting element is attached by soldering, welding, or adhesive bonding.

29. (Original): The energy transfer apparatus of claim 28 wherein said temperature detecting element is a thermocouple having a first and second leads joined separately to said first leg, each lead in electrical communication with said first leg.

30. (Previously Presented): The energy transfer apparatus of claim 1 wherein a radio frequency electrode is attached to each leg of said basket.

31. (Original): The energy transfer apparatus of claim 30 wherein said radio frequency electrode is attached to each leg of said basket by a heat shrink fastener.

32. (Original): The energy transfer apparatus of claim 31 wherein said temperature detecting element is placed between at least one of said legs and said heat shrink fastener.

33. (Previously Presented): The energy transfer apparatus of claim 1 wherein a resistively heated element is coiled around at least a portion of each legs.

34. (Original): The energy transfer apparatus of claim 33 wherein said temperature detecting element is placed between at least one of said legs and said resistively heated element.

35. (Previously Presented): The energy transfer apparatus of claim 1 wherein a polymeric heating element is on at least a portion of each basket leg.

36. (Previously Presented): The energy transfer apparatus of claim 1 wherein an electrically conductive paint covers at least a portion of each basket leg.

37 (Previously Presented): The energy transfer apparatus of claim 1 wherein a printed flex circuit is on at least a portion of each basket leg.

38. (Previously Presented): The energy transfer apparatus of claim 1 wherein said legs are joined in electrical communication at either proximal, distal, or both joints by soldering, welding, or adhesive.

39. (Original): The energy transfer apparatus of claim 38 wherein said distal joint further comprise an adhesive which fixedly attaches said ends of legs to said joint.

40. (Original): The energy transfer apparatus of claim 38 wherein either said proximal or distal joint not in electrical communication is adhesively bonded or thermoformed.

41. (Previously Presented): The energy transfer apparatus of claim 1 wherein said elongated body comprises a plurality of basket leg lumens, wherein each of said ends of said basket legs is placed in each lumen.

42. (Previously Presented): The energy transfer apparatus of claim 1 wherein said plurality of legs is formed from a single sheet.

43. (Original): The energy transfer apparatus of claim 42 wherein said sheet is a stainless steel material.

44. (Original): The energy transfer apparatus of claim 1 wherein said deployment member further comprises a sheath being slidably coupled and exterior to said elongated body and said expandable portion, and

wherein said expandable portion is resilient and upon advancement out of said sheath said expandable member self expand into said second state.

45. (Original): The energy transfer apparatus of claim 1 wherein said deployment member is force compensated to limit a force which said expandable member can apply to the airway while in said second expanded state.

46. (Original): The energy transfer apparatus of claim 1 wherein said deployment member further comprises a deflection limiting stop to limit a size of said second state of said expandable member.

47. (Previously Presented): The energy transfer apparatus of claim 1 wherein said deployment member comprises:

a handle adjacent to a proximal end of said elongated body;

and at least a first control member moveably attached to said handle.

48. (Original): The energy transfer apparatus of claim 47 wherein said elongated body is slidably attached to said handle;

said elongated body, said wire, and said distal tip are slidably moveable in distal and proximal directions; and further comprising

a stop configured to prevent distal movement of said wire beyond a deployment point, wherein beyond said deployment point distal movement of said elongated body against said non-moving distal tip causes said expansion member to expand to said second state.

49. (Original): The energy transfer apparatus of claim 48 further comprising a sheath, said sheath being slidably coupled and exterior to said elongated

body and said expandable portion, wherein said expandable portion advances out of a distal end of said sheath to expand to said second state.

50. (Original): The energy transfer apparatus of claim 48 wherein said first control member is configured to advance said elongated body and said wire in distal and proximal directions.

51. (Original): The energy transfer apparatus of claim 50 further comprising a detent means for maintaining said elongated body distally of said deployment point.

52. (Previously Presented): The energy transfer apparatus of claim 50 wherein said control member is configured to frictionally maintain said elongated body distally of said deployment point.

53. (Original): The energy transfer apparatus of claim 47 further comprising

a sheath external to and covering said elongated body and said expandable portion, said sheath extending from said distal tip to said proximal portion; and wherein

said handle is adjacent to a proximal end of said sheath, said sheath being slidably attached to said handle, said elongate body being rigidly attached to said handle;

said wire, and said distal tip are slidably moveable in distal and proximal directions;

said first control member being attached to said sheath, said first control member moveably secured to said handle, where distal movement of said first control member retracts said sheath distally on said elongate member uncovering said elongate member and said expandable portion; and

second control member attached to said wire, said second control member moveably secured to said handle, where distal movement of said second control member retracts said distal tip and said expandable portion against said non-moving elongated member causing said expandable portion to radially expand into said second state.

54. (Original): The energy transfer apparatus of claim 1 wherein said elongated body has a wall reinforced with a polymeric or metallic member.

55. (Original): The energy transfer apparatus of claim 1 wherein said apparatus is sized to fit within a working channel of a bronchoscope.

56. (Original): The energy transfer apparatus of claim 55 wherein a diameter of said working channel of said bronchoscope is less than or equal to 2 mm.

57. (Original): The energy transfer apparatus of claim 1 wherein said flexible elongated member has a stiffness sufficient to pass through a working channel seal of a bronchoscope.

58. (Original): The energy transfer apparatus of claim 1 wherein said distal tip is configured to minimize gouging of the airway.

59. (Original): The energy transfer apparatus of claim 58 further comprising a redundant joint attaching said distal tip to said elongated body.

60. (Original): The energy transfer apparatus of claim 58 wherein said distal tip is sized to fit within a bronchoscope.

61-63. (Cancelled)

64. (Previously Presented): The energy transfer apparatus of claim 62 wherein a temperature detecting element is attached to a portion of said wire located within said expandable portion.

65. (Original): The energy transfer apparatus of claim 1 wherein a portion of said elongated body is radiopaque.

66. (Original): The energy transfer apparatus of claim 1 further comprising a steering member configured to deflect said distal tip in a desired direction.

67. (Previously Presented): The energy transfer apparatus of claim 1 further comprising a vision system.

68. (Original): The energy transfer apparatus of claim 67 wherein said vision system comprises a fiber optic cable extending through said elongated body.

69. (Original): The energy transfer apparatus of claim 67 wherein said vision system comprises a CCD chip.

70. (Original): The energy transfer apparatus of claim 1 further comprising a power supply configured to deliver energy to through said energy transfer elements to the airway walls.

71. (Original): The energy transfer apparatus of claim 70 wherein said power supply is configured to stop delivery of energy if said temperature detecting element detects a predetermined maximum temperature.

72. (Original): The energy transfer apparatus of claim 70 wherein said power supply is configured to stop delivery of energy if a predetermined temperature change is not detected within a predetermined time.

73. (Original): The energy transfer apparatus of claim 1 wherein said apparatus is sterile.

74. (Original): A kit comprising

an energy transfer apparatus as recited in claim 1 for facilitating energy transfer into a mass of airway tissue, and

a generator configured to deliver energy to said energy transfer apparatus.

75. (Original): The kit of claim 74 further comprising a bronchoscope.

76-78. (Cancelled)

79. (Previously Presented): The energy transfer apparatus of claim 70 wherein said power supply is configured to deliver energy for 3-5 seconds.

80. (Previously Presented): The energy transfer apparatus of claim 79 wherein said power supply is configured to deliver 10-15 Watts of power.

81. (Previously Presented): The energy transfer apparatus of claim 70 wherein said power supply is configured to deliver energy for 5-10 seconds.

82. (Previously Presented): The energy transfer apparatus of claim 81 wherein said power supply is configured to deliver energy in a temperature control mode.

83. (Previously Presented): An energy transfer apparatus for facilitating energy transfer into a mass of airway tissue, the apparatus comprising:

a flexible elongated body having a proximal portion and a distal portion and at least one lumen extending therebetween;

an electrically non-conductive distal tip located at a distal end of the apparatus;

a plurality of electrically conductive legs each having a distal end and a proximal end, where the distal end of each of the plurality of electrically conductive legs terminates in the distal tip, such that the plurality of electrically conductive legs are in electrical communication, each electrically conductive leg having a treatment section located between the distal and proximal ends, and being adapted to deflect away from an axis of the elongate body;

a proximal joint located on a distal portion of the elongated body, where the proximal end of each of the electrically conductive legs terminates in the proximal joint; and

an electrically conductive wire extending through the lumen of the elongated body and terminating at the distal tip, the wire being in electrical communication with the plurality of electrically conductive legs such that it may deliver current to the electrically conductive legs, the wire also being moveable relative to the proximal joint to permit deflection of the plurality of conductive legs.

84. (Previously Presented): The apparatus of claim 83 further comprising a handle containing an actuator adapted to move the proximal joint relative to the electrically conductive wire, the handle also adapted to electrically couple the electrically conductive wire to a power supply.

85. (Previously Presented): The apparatus of claim 83, further comprising a temperature detecting element coupled to at least one of the plurality of legs.

86. (Previously Presented): The apparatus of claim 85, where the temperature detecting element comprises a thermocouple having a first and second leads, where the first and second leads are electrically connected to a portion of the leg at separate locations on the leg such that the portion of the forms part of the thermocouple.

87. (Previously Presented): The energy transfer apparatus of claim 85 wherein said temperature detecting element is electrically coupled to a surface of said leg.

88. (Previously Presented): The energy transfer apparatus of claim 85 wherein the temperature detecting element is attached to an inside of one of the plurality of single legs.

89. (Previously Presented): The energy transfer apparatus of claim 85 further comprising at least one additional temperature detecting element attached at least one of the plurality of legs.

90. (Previously Presented): The energy transfer apparatus of claim 83 further comprising a power supply adapted to deliver radio frequency energy to the treatment section on the electrically conductive legs.

91. (Previously Presented): The energy transfer apparatus of claim 90 wherein the apparatus is monopolar.

92. (Previously Presented): The energy transfer apparatus of claim 90 wherein the apparatus is bipolar.

93. (Previously Presented): The energy transfer apparatus of claim 83 further comprising a power supply adapted to deliver energy to resistively heat the treatment section of the electrically conductive legs.

94. (Previously Presented): The energy transfer apparatus of claim 83 wherein each of said legs having a treatment section substantially parallel to said elongated body and each of said legs being spaced around a circumference of said elongated body to form a basket deflected away from the axis of the elongate body.

95. (Currently Cancelled)

96. (New): An energy transfer apparatus for facilitating energy transfer into a mass of airway tissue, said apparatus sized to enter a bronchus or bronchiole of a human lung and comprising:

a flexible elongated body having a proximal portion and a distal portion and at least one lumen extending therebetween;

a distally located expandable portion of said elongated body, said expandable portion having a first state and a second state, wherein said second state is radially expanded from said elongated body;

a distal tip located distally of said expandable portion;

at least one energy transfer element at an exterior of said expandable portion, wherein each of said energy transfer elements is configured to contact a wall of the bronchus or bronchiole when said expandable portion is in said second state,

a proximal joint at an intersection of said distal portion and said expandable portion wherein said expandable portion comprises a plurality of legs, each of said legs having a first end extending from said proximal joint and a second end fixedly attached to a distal joint, said distal joint being adjacent to said distal tip;

a temperature detecting element attached to one of said plurality of legs wherein said temperature detecting element is in electrical communication, said temperature detecting element having at least two leads where each lead is spaced from the other lead when attached to at least one leg.